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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/644,817	08/23/2000	Leonid Volkov	ROSE-8009	2476
25962	7590	01/13/2004		
SLATER & MATSIL, L.L.P. 17950 PRESTON RD, SUITE 1000 DALLAS, TX 75252-5793			EXAMINER LEE, SHUN K	
			ART UNIT	PAPER NUMBER

2878

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/644,817	VOLKOV ET AL.	
	Examiner	Art Unit	
	Shun Lee	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20, 44-49, 51-61, 63-74 and 83-129 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-49, 51-61, 64-74, 83, 105, 106, 108, 109, 111-116, 118-120, 123-125 and 128 is/are allowed.
- 6) ☒ Claim(s) 63, 95-97, 110, 117, 121, 122, 126 and 129 is/are rejected.
- 7) ☒ Claim(s) 11-20, 84-94, 98-104, 107 and 127 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/3/02 & 10/27/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>121100</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Response to Amendment

1. Applicant has indicated that claims 88-130 were added (first paragraph on pg. 39 of remarks filed 27 October 2003). However, it is noted that only new claims 88-120 (pg. 33-36) and new claims 122-130 (pg. 37-38) were added and thus fails to comply with 37 CFR 1.126 (*i.e.*, when claims are added, they must be numbered by the applicant consecutively beginning with the number next following the highest numbered claim previously presented (whether entered or not)). Therefore, misnumbered claims 122-130 have been renumbered 121-129 under 37 CFR 1.126.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

3. The information disclosure statement filed 11 December 2000 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but some of the information referred to therein has not been considered. It is noted that applicant has provided a legible copy of the first paper. However, applicant has failed to provide

Art Unit: 2878

a legible copy (e.g., portions of pages are cut off and illegible portions due to shading and spine curvature) of the second paper.

Drawings

4. The drawings were received on 27 October 2003. These drawings are not acceptable. The drawings are objected to because:

(a) in Fig. 41c, " $\omega_{024,1}$ " as indicated is different from the original Fig. 41c (see also " $\omega_{024,1}$ " in Fig. 41a);

(b) in Fig. 42b, the width labeled " $\omega_{s24,1}$ " has a different extension than the original Fig. 42b; and

(c) they do not include the following reference sign(s) mentioned in the description:

610 (last paragraph on pg. 84) and thus fails to comply with 37 CFR 1.84(p)(5).

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities: on pg. 55, "551-558" in the last two paragraphs should probably be --551b-558b-- (see Fig. 28b). Appropriate correction is required.

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

7. Claims 11, 84-87, 92, 94, 95, 98, 100, 104, 107, 110, and 127 are objected to because of the following informalities:

- (a) in claim 11, "directly" on line 9 should probably be --directing--;
- (b) in claim 84, "The system" on line 1 should probably be --The apparatus--;
- (c) in claim 85, "The system" on line 1 should probably be --The apparatus--;
- (d) in claim 86, "The system" on line 1 should probably be --The apparatus--;
- (e) in claim 87, "The system" on line 1 should probably be --The apparatus--;
- (f) in claim 92, "spatially distinct scatterers" on line 1 should probably be --said spatially distributed point scatterers--;
- (g) in claim 94, "with by" on line 2 should probably be --by--;
- (h) in claim 95, "a set of point scatterers" on line 3 should probably be --said set of point scatterers--;
- (i) in claim 98, "composition each" on line 1 should probably be --composition of each--;
- (j) in claim 100, "a multi-element receiver" on line 8 and again on line 10 is indefinite and can lead to misinterpretation (if both elements are the same, the later should be identified as --said multi-element receiver--);
- (k) in claim 100, "directly" on line 9 should probably be --directing--;
- (l) in claim 104, "features" on line 4 should probably be --said features--;
- (m) in claim 107, "the point scatterers" on line 1 should probably be --the radiation scatterers--;

- (n) in claim 110, "the point scatterers" on line 2 should probably be --the radiation scatterers--;
- (o) in claim 127, "second" on line 3 should probably be --first--; and
- (p) in claim 127, "the said first and second characteristic polarization states" on lines 9-10 should probably be --said first and second polarization states--.

Appropriate correction is required.

8. Claim 16 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 20. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 96, 110, 117, 121, and 129 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 96 recites the limitation "wherein the frequencies of the modulation signals partially overlap one another". However, the specification discloses (last paragraph on

pg. 43) that "Generally the modulation signals may exhibit different spectral signatures. In any case, the induced frequency shifts should be sufficiently smaller than any intentional existing frequency differences between different spectral components of the incident radiation in order to avoid any destructive frequency overlapping of the spectral components". Thus claim 96 contains subject matter which was not described in the specification.

Claim 110 recites the limitation "wherein the modulation frequency of the modulation signals is randomly distributed over the point scatterers of the diffuser and the frequency spread of the modulation frequencies is narrow band" which was not described in the specification.

Claim 117 recites the limitation "wherein each radiation scatterer includes a non-linear element" which was not described in the specification.

The specification discloses (third paragraph on pg. 45) that "Figure 18a illustrates a possible realization of this type of diffuser 1200. A set of randomly located rectangular passive high-Q antennae 1220, 1220, 1240, ..., 1280 on a thin dielectric substrate 1300 with distinct central resonance frequencies is illuminated by radiation the frequency of which is varied in time between a lower limit f_l and a higher limit f_h (see Figure 18b as well)". However, claim 121 recites the limitation "wherein the frequency resonances of the radiation scatterers are randomly distributed over the diffuser array" which was not described in the specification.

Claim 129 recites the limitation "wherein the periodic signal has a ground harmonic frequency equal to half of the frequency difference between the two spectral lines" which was not described in the specification.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 63, 95, 97, 110, 122, and 126 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regard to claims 63 and 122, a claim which is directly or indirectly dependent on a canceled claim is incomplete (see MPEP § 608.01(n)) and is therefore indefinite.

Claim 95 recites the limitation "the processor" in line 2 which is indefinite since it is unclear if the antecedent basis for this limitation is "a processor" in line 1 of claim 95 or "a processor" in line 12 of claim 11.

The term "narrowly ranging" in claim 97 is a relative term which renders the claim indefinite. The term "narrowly ranging" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. That is, it is unclear what constitutes a narrow range of frequencies.

The term "narrow band" in claim 110 is a relative term which renders the claim indefinite. The term "narrow band" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. That is, it is

unclear what constitutes a narrow frequency spread over which the modulation frequencies are distributed.

Claim 126 recites the limitation "the destination" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Allowable Subject Matter

13. Claims 44-49, 51-61, 64-74, 83, 105, 106, 108, 109, 111-116, 118-120, 123-125, and 128 are allowed.

14. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to a nonobvious improvement over the invention patented in US Patent 5,073,782. The improvements comprise in combination with other recited elements: (a) a processor causing the point scatterers to be controlled based on information determined from the electrical signals received from the receiver as recited in independent claim 11 (and dependent claims 14, 15, 17-20, and 88-99); (b) each radiation scatterer comprises a static high-Q resonant scatterer exhibiting frequency resonance belonging to a particular frequency band and wherein the radiation emitting source comprises a radiation source that sweeps over the particular frequency band as recited in independent claim 44 (and dependent claims 45-49, 51, 105-120, and 121); (c) each radiation component being labeled by a given frequency shift between the two spectral lines as recited in independent claim 52 (and dependent claims 53-58 and 123-129) and independent claim 83 (and dependent claims 84-87); (d) controlling the difference between a first s-mmwave frequency and a second s-mmwave frequency as recited in independent claim 59 (and dependent claims 60,

61, 64-67); (e) scattering radiation from a first and second sets of point scatterers by directing energy of a voltage controlled oscillator operating at a first s-mmwave frequency to uniformly illuminate the set of first polarization state point scatterers load-modulated with a first time varying signal and the set of second polarization state point scatterers load-modulated with a second time varying signal, wherein the first and second polarization states are orthogonal and the oscillator is polarized in a third characteristic polarization state substantially differs from the first and second polarization state, and wherein the ground harmonic of first time varying signal essentially differs from any harmonic of the second harmonic time varying signal as recited in independent claim 68 (and dependent claims 69-74); and (f) modulating a spectral shift (difference) between doublet spectral components as recited in independent claim 100 (and dependent claims 12, 13, 16, and 101-104).

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any


extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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